

R E M A R K S

Claims 1 and 7 were amended to recite the feature that the steel sheet has a creep elongation of 0.50% or smaller when the steel sheet is maintained at a temperature of 450°C for 20 minutes with a tension of 300 N/mm² applied thereto. The conditions of this creep elongation test are disclosed below Table 1 on page 29 of the specification.

Table 2 on page 32 of the specification shows that samples within the range according to the present invention had a creep elongation of 0.50% or smaller. Accordingly, the feature added to claims 1 and 7 is supported by the specification. It should be noted that, as shown in Table 2, the sample satisfying claim 7 has a particularly preferable creep characteristic.

Claims 13 to 16 were amended to make minor editorial revisions.

The present invention provides a steel sheet for a tension mask that exhibits excellent magnetic shielding properties based on an anhysteretic magnetic permeability of 5,000 or higher, as well as an excellent creep resistance under high temperatures.

Claims 1 to 3, 7 to 9, and 13 to 18 were rejected under 35 USC 102 as being anticipated by or, in the alternative, under 35 USC 103 as being obvious over each of JP 5-311327 and JP 8-027541 for the reasons set forth in item no. 5 on pages 3 to 5 of the Office Action.

As admitted in the Office Action, JP 5-311327 and JP 8-027541 do not include any disclosure concerning anhysteretic magnetic permeability (anhysteretic permeability).

It was admitted in the Office Action that the references do not teach the exact same process as recited in applicants' claims 13 and 14.

For a steel sheet to have an anhysteretic magnetic permeability of 5,000 or higher as in the presently claimed invention, it is necessary not only to adjust the composition of the steel sheet to be within the range according to the presently claimed invention, but also to anneal the steel sheet under a temperature not higher than the recrystallization temperature after the final cold rolling. This is described in the present specification on page 14, lines 18 to 23, and is recited in claims 4, 10, 13, and 14.

As shown in Tables 2 and 4 on pages 32 and 36, respectively, in the specification, samples Nos. 1, 5, 23, and 28 which were not annealed subsequently to the final cold rolling did not have an anhysteretic magnetic permeability of 5,000 or higher, and thus they were inferior with respect to magnetic shielding properties.

In contrast to the presently claimed invention, according to JP 5-311327 and JP 8-027541, a steel sheet is annealed at a temperature in the recovery or recrystallization temperature region less than the transformation point, and then subjected to a secondary cold rolling (a final cold rolling), but, thereafter, the steel sheet is not annealed. The above-described samples Nos. 1, 5, 23 and 28 shown in Tables 2 and 4 in the present specification have compositions falling within the range specified in JP 5-311327 and JP 8-027541 and were not annealed after the final cold rolling. As a result, these samples had an anhysteretic magnetic permeability of lower than 5,000, as shown in said Tables 2 and 4. Accordingly, it is evident that the steel sheets of these references also have an anhysteretic magnetic permeability of lower than 5,000.

It is therefore respectfully submitted that a steel sheet having an anhysteretic magnetic permeability of 5,000 or higher according to the presently claimed invention is not anticipated and is not rendered obvious by JP 5-311327 or JP 8-027541, which clearly do not teach or suggest steel sheets having an anhysteretic magnetic permeability of 5,000 or higher, as recited in applicants' claims.

Further, JP 5-311327 and JP 8-027541 do not pay any attention to anhysteretic magnetic permeability or to creep resistance. In contrast to JP 5-311327 and JP 8-027541, the presently claimed invention provides a steel sheet that has an anhysteretic magnetic permeability of 5,000 or higher, which serves to improve the magnetic shielding properties, as well as provide an excellent creep resistance.

Claims 1 to 3, 7 to 9, and 13 to 18 were rejected under 35 USC 103 as being unpatentable over WO 01/12870 to Sugihara et al. for the reasons set forth in item no. 6 on pages 5 and 6 of the Office Action.

It was admitted in the Office Action that Sugihara et al. do not teach the process steps recited in applicants' claims 13 and

14.

Sugihara et al. do not include any disclosure concerning creep characteristics.

The presently claimed invention results in a steel sheet having desirable magnetic and creep resistance, and thus completely differs from WO 01/12870, which does not pay any attention to creep resistance.

According to the presently claimed invention, as described in the specification from page 25, line 8 to page 27, line 2, an annealing treatment is carried out in a temperature region in which recrystallization does not occur (preferably at 590°C), subsequently to a cold rolling or a skin pass rolling after the cold rolling, to improve the creep resistance under high temperatures, as well as the magnetic characteristics. If the annealing temperature exceeds 600°C, the treated steel sheet will have a creep elongation of larger than 0.50% (measured when the steel sheet is maintained at 450°C for 20 minutes with a tension of 300 N/mm² applied thereto) - see samples Nos. 9 and 32 in Tables 2 and 4 on pages 32 and 36, respectively, of the present specification.

In contrast to the presently claimed invention, WO 01/12870 discloses an annealing treatment for recrystallization performed at a temperature of 600°C to 780°C, after a cold rolling (see US2004/0007290A1 corresponding to this reference, page 4, paragraph number 0066). In Sugihara et al., the annealing temperature is set to be 600°C or higher to remove the residual strain caused by the cold rolling. Accordingly, it is evident that Sugihara et al. do not pay any attention to creep resistance under high temperatures. As a matter of fact, it is apparent that Sugihara et al. do not attain an excellent creep resistance under high temperatures.

It is therefore respectfully submitted that the presently claimed invention is not rendered obvious by WO 01/12870.

Claims 1 to 3, 7 to 9 and 13 to 18 were rejected under 35 USC 103 as being obvious over USP 6,635,361 to Sugihara et al. for the reasons stated in item no. 8 on pages 8 to 10 of the Office Action.

Applicants' present claims recite a creep elongation of 0.50% or smaller. Such feature does not appear to be taught or suggested in USP 6,635,361.

Withdrawal of the prior art rejections is therefore respectfully submitted.

Claims 1 to 3, 7 to 9 and 13 to 18 were rejected on the grounds of obviousness-type double patenting as being unpatentable over claims 1 to 18 of USP 6,635,361 to Sugihara et al. for the reasons set forth in item no. 7 on pages 6 to 8 of the Office Action.

The present claims in this application recite a steel sheet having a creep elongation of 0.50% or smaller. Such feature is not recited in the claims of USP 6,635,361.

Withdrawal of the double patenting rejection is therefore respectfully submitted.

Reconsideration is requested. Allowance is solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

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